

U.S. Non-Provisional Application
In re. Jonathan S. Till
Filed August 16, 2001
Attorney Docket No. 10551-211

What is claimed is:

- 1 1. A method for reversing presbyopia comprising
2 applying localized energy to the area to be
3 treated and administering a pharmaceutically
4 sufficient quantity of a biologically
5 acceptable chemical substance capable of
6 breaking the chemical bonds between disulfates
7 of the cortical lens fibers.
- 1 2. The method of claim 1, wherein said localized
2 energy comprises treatment with at least one
3 or more of heat, energy, sound or enzyme.
- 1 3. The method of claim 1, wherein said
2 biologically acceptable chemical comprises
3 glutathione, thiols and derivatives thereof.
- 1 4. A method for increasing the amplitude of
2 accommodation of a human eye having a lens and
3 a ciliary muscle comprising the step of
4 administering a pharmaceutically sufficient
5 quantity of a biologically acceptable reducing

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1 agent to affect a change in the elasticity of
2 the human lens.

1 5. The method of claim 4, wherein the
2 biologically acceptable reducing agent is
3 selected from the group consisting of
4 glutathione , thiols and derivatives thereof.

1 6. The method of claim 4, further comprising the
2 step of treating the human eye with external
3 energy.

1 7. The method of claim 1, wherein reformation of
2 disulfide bonds is prevented.

1 8. A method for treating presbyopia comprising
2 breaking disulfide bonds formed about the lens
3 fibers to form sulfides and reducing them with
4 either hydrogen or other agents.

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- 1 9. The method of claim 8, further comprising
2 catalyzing the reaction by applying energy.

- 1 10. The method of claim 8, wherein said disulfide
2 bond breaking is catalyzed by agents selected
3 from the group consisting of aldoreductase,
4 glyoxylase, glutathione S-transferase, thiol
5 reductase, tyrosine reductase or any
6 biologically suitable compatible reductase.

- 1 11. A method for treating presbyopia comprising
2 breaking disulfide bonds and reforming the
3 sulfide bonds with -CH₃ or any other suitable
4 molecule.

- 1 12. The method of claim 11, wherein said breaking
2 disulfide bonds further comprises the applying
3 external energy.

- 1 13. The method of claim 11, wherein said breaking
2 disulfide bonds further comprises applying

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1 enzyme capable of breaking the disulfide
2 bonds.

1 14. The method of claim 13, wherein said enzyme
2 comprises S-methyl glutatione, S-Transferase.

1 15. The method of claim 11, wherein said breaking
2 disulfide bonds further comprises applying a
3 chemical catalyst capable of promoting a
4 catalytic reaction.

1 16. The method of claim 15, wherein said chemical
2 catalyst comprises methyl-methane
3 thiosulfonate and methyl glutatione.

1 17. A method for treating presbyopia comprising
2 breaking interlenticular fiber adhesions and
3 freeing the fibers to move relative to each
4 other.

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1 18. The method of claim 17, wherein said breaking
2 interlenticular fiber adhesions further
3 comprises applying external energy.

1 19. The method of claim 17, wherein said breaking
2 interlenticular fiber adhesions further
3 comprise applying enzyme capable of breaking
4 said interlenticular fiber adhesions.

1 20. The method of claim 17, wherein said breaking
2 interlenticular fiber adhesions further
3 comprise applying a chemical catalyst capable
4 of promoting a catalytic reaction.

1 21. A method for reversing presbyopia comprising
2 applying localized energy to the area to be
3 treated and administering a pharmaceutically
4 sufficient quantity of a biologically
5 acceptable chemical substance capable of
6 breaking the chemical bonds between disulfates
7 of the cortical lens fibers.

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1 22. An agent that prevents or reduces the
2 likelihood of reformation of disulfide bonds.

1 23. A pharmaceutical composition for treatment of
2 presbyopia comprising thiol transferase,
3 glutathione, nicotineamid adenine dinucleotide
4 phosphate.

1 24. The pharmaceutical composition of claim 23,
2 further comprising a biocompatible carrier.

1 25. The pharmaceutical composition of claim 23
2 encased in a viral phage.

1 26. The pharmaceutical composition of claim 24,
2 wherein the composition is administered
3 topically.

1 27. The pharmaceutical composition of claim 23
2 administered systematically.

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- 1 28. The composition of claim 23, further
2 comprising a photo reactive compound.

- 1 29. The composition of claim 28, wherein the
2 composition is activated by introduction of
3 external energy.

- 1 30. The composition of claim 23, wherein the thiol
2 transferase is present in an amount of 0-20%
3 by volume.

- 1 31. The composition of claim 23, wherein the
2 glutathione is present in an amount of 0-20% by
3 volume.

- 1 32. The composition of claim 23, wherein
2 nicotineamid adenine dinucleotide phosphate is
3 present in an amount of 0-20% by volume.

- 1 33. The composition of claim 23, wherein the
2 glutathione is S-glutathione.